

Physics XI _ Motion_ Numerical from Past Papers

Q.A helicopter weighs 3290 N: Calculate the force on it if it is ascending vertically at the rate of 2 m / sec^2 . What will be the force on the helicopter if it is moving up vertically with the constant speed of 4 m / sec ? **(Year 2010)**

Q.A 150 gm bullet is fired from a 15 kg gun with a speed of 1000 m/s. what is the speed of the recoil of the gun? **(Year 2007)**

Q.A 100 gm golf ball moving with a velocity of 20 m/s colliders with a 8 kg steel ball at rest. If the collision is elastic, compute the velocities of both the balls after collision. **(Year 2006, 2004)**

Q.A car starts from rest and move with a constant acceleration. During the 5th second of its motion it covers a distance of 36 m; calculate: The Acceleration of the car and the total distance covered b the car during this time. **(Year 2003)**

Q. 5gm bullet is fired from 15 kg gun with a speed of 1500m/s. What is the speed of the recoil of the gun? **(Year 2003 Pre-Med)**

Q. A machine gun fires 20 bullets per second in to a target. Each bullet weight 10 gm and has a speed of 1500m/s; Find the Force necessary to hold the gun in position. **(Year 2002 Pre - Eng)**

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Q. Two blocks of masses 10.2 kg and 4.5 kg are attached to the ends of a string which passes over a frictionless pulley in such a way that the block of mass 10.2 kg lies on a horizontal surface and the other block hangs vertically, find the acceleration of the system and the tension in the string. **(Year 2001)**

Q. A motor car is moving up a slope of 30° with a velocity of 72 km/hr. suddenly the engine fails. How much distance will the car move before coming to rest? Assume friction to be negligible. **(Year 2000)**

Q. 5 gm bullet is fired into a 10 kg wooden block that is suspended by a long chord so that it can swing as a pendulum. If the block is displaced so that its center of gravity rises by 10 cm, what is the speed of the bullet? **(Year 1999)**

Q. A 100 gm bullet is fired into a 12 kg block which is suspended by a long chord. If the bullet is embedded in the block and the block rises by 5 cm, find the speed of the bullet? **(Year 1997)**

Q. Two bodies A & B attached to the ends of a string passing over a frictionless pulley such that the masses hang vertically. If the mass of a body is 96 kg..Find tension in the string [$g = 9.8 \text{ m/s}^2$]. Find the mass of the second body which moves downward with an acceleration of 0.2 m / sec^2 . **(Year 1998)**

Q. A boy throws a ball upward with a speed of 25 m / sec. On its way down it is caught at a point 5m above the ground. How fast was it coming down at this point? How long did the trip take? **(Year 1996)**

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Q. A mini bus starts moving from the position of rest at a bus stop with a uniform acceleration. During the 10th minute of its motion it covers a distance 33 of 95 meters. Calculate its acceleration and total distance covered in 10 minutes. **(Year 1994)**

Q. Small metal sphere of 50 gm is suspended by a light string. As it oscillates the sphere is 0.75 m from the ground at its highest point and 0.75m at its lowest point. Find its maximum speed and maximum momentum. **(Year 1993)**

Q. A stone is thrown vertically upwards. It takes 30 sec to return to the ground. How high does the stone go? **(Year 1991)**

Q. Ball of mass 0.5 kg and moving with a speed 2m/sec, strikes with a rigid wall in a direction perpendicular to the wall and is reflected back after a perfectly elastic collision. If during the collision the ball remains in contact with the wall for 0.5 second. Calculate the average force exerted on the ball by the wall. **(Year 1990)**

Q. A helicopter of mass 3×10^3 kg rises vertically with the constant speed of 25 m/sec. What is the resultant force acting on the helicopter? **(Year 2002 Pre-Eng)**

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